Aeration and Cherry Scald— 1967 Results

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In the July, 1967 issue, Canner/Packer promised to continue to report on new data obtained on aeration as a cure for cherry scald. Working together, Michigan State University and USDA scientists have submitted this report for publication based on findings for the 1967 season.

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Tests conducted in Michigan in 1967 showed that aeration of cherry tanks, either in the orchard or at the cannery, did not reduce scald and did cause an increase in oxidative browning.

Scald is a serious quality defect of canned or frozen Montmorency cherries. It is initiated by bruising during harvesting and intensified by repeated bruising during hauling and handling. Scald is especially severe during warm weather.

During the 1967 season a definition was sought to find out under what conditions aeration may be beneficial in reducing scald, and to what extent it causes oxidative browning. Semi-commercial tests were conducted in Michigan on (1) cherries in the orchard immediately after harvest, and (2) cherries during the normal soaking period at the processing plant.

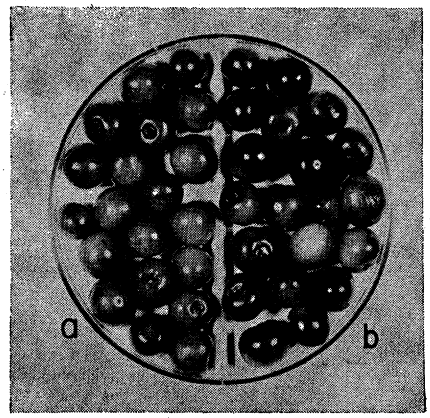
Cherries are usually soaked in cold water for 6 to 24 hours prior to processing. This provides a convenient means of storage and firms the fruit prior to pitting. However, water temperatures above 50 F and soaking periods longer than 12 hours may increase scald. DeKazos (J. Food Science, Vol. 31, pp. 956-963, 1966) reported that aeration of cherry soak tanks at about 60°F reduced scald from 13.9 percent to 2.5 percent, but an additional 2.3 percent of the aerated cherries developed brown spots. Oxidative browning is a serious defect, especially with frozen cherries.

Aeration of Orchard Tanks

Machine harvested cherries are usually collected in water in portable tands (48″ x 36″ x 30″) holding approximately 1000 pounds of fruit. The resulting mixture of cherries and cold water usually 60°F, the temperature generally considered to be safe for temporary storage and transport of the fruit. Aeration was accomplished immediately after harvest by using a portable tank of compressed air attached to aeration hose placed in the bottom of a 30-pound container filled with cherries and water. Table 1 shows that there was no benefit from orchard aeration. The percent scald in the aerated sample was similar to that in the non-aerated control. Also, most of the scale spots of the aerated cherries were oxidized and in general, the fruit had a dark, non-uniform and unattractive appearance when cooked.

Aeration at the Factory

In another test, machine harvested cherries were transferred to two rectangular metal tanks (same size as mentioned above) and soaked for eight hours by circulating 50°F water. One tank was equipped with an aeration system consisting of a grid of aeration hose lying on the bottom of that delivered two cubic feet of air the tank and connected to a pump per minute. At the end of the soaking period the raw cherries were graded for scald by a USDA raw fruit inspector. Samples were canned, stored five months, and then graded by a USDA processed products inspector. The results (Table 2) show slightly more scald in the aerated cherries than in the non-aerated controls.



The (a) and (b) sections of the plate contain cherries after cooking. Section (a) is filled with non-aerated cherries, while section (b) contain the aerated fruit.

Further studies may show that aeration is advantageous under certain specific conditions. However, with the present state of knowledge, there does not appear to be any benefit and there is definite risk.

The best measures at present to minimize cherry scald are reduce bruising during harvest, avoid rebruising during hauling and handling, cool orchard tanks promptly to 60°F, and maintain soak tanks at 50°F or below.

Table 1

Aeration of Cherries in the Orchard
(2 hrs. at 78°F)

	% Scald
not aerated	18
aerated	19

Table 2

Effect of Aeration of Cherry Soak Tanks
(8 hrs. at 50°F)

	% Scald*	
Treatment	Raw	Canned
not aerated	5	11
aerated	11	15

*Graded by USDA Inspector.